



THE IMPACT OF ELECTRICAL AND STRUCTURAL REMODELING ON OUTCOMES IN PATIENTS UNDERGOING CATHETER ABLATION OF PERSISTENT ATRIAL FIBRILLATION

ACC Poster Contributions

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Background: Prior studies have suggested that structural and electrical remodeling are associated with suboptimal outcomes in patients undergoing catheter ablation of atrial fibrillation (AF). However, the interaction of these factors and their relative impact on outcome following catheter ablation of persistent AF is not clear.

Methods: The subjects of this study were 79 consecutive patients who underwent catheter ablation of persistent AF. LA volume was determined by echocardiography. Electrograms from the LA appendage, coronary sinus (CS) and lead V1 were obtained before ablation and the dominant frequency (DF) was analyzed using fast-Fourier transformation. The ablation strategy consisted of antral pulmonary vein isolation followed by ablation of complex fractionated electrograms in the LA and coronary sinus, followed by linear LA ablation.

Results: The LA volume indexed, mean LA amplitude and DF in the LA appendage were 48 ± 16 mL/m², 0.58 ± 0.20 mV and 6.3 ± 0.8 Hz, respectively. There was a significant inverse correlation between LA volume and DF in the LA appendage ($P=0.0003$, $R=-0.40$). The mean LA amplitude was correlated with DF in LA appendage ($P=0.0008$, $R=0.37$). In 38 patients (48%), AF terminated during catheter ablation. Sixty-six of the 79 patients (84%) were arrhythmia-free without antiarrhythmic drugs during a mean of 14 ± 7 months after the last procedure. A lower AF frequency in the LA appendage was associated with AF termination (OR, 0.28; 95% CI, 0.09 to 0.87; $p=0.03$), and a lower AF frequency in lead V1 was associated with a favorable long-term outcome (OR, 4.9; CI, 1.2-20; $p=0.03$). LA volume and amplitude were not predictive of outcome.

Conclusion: An inverse relationship between LA volume and AF frequency suggests that structural and electrical remodeling may not be parallel events. With an extensive ablation strategy, persistent AF may be eliminated in ~85% of patients. AF frequency appears to be a more robust predictor of outcome as compared to LA volume.